PA-119/INFINITY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of :

R. LEE ROBERTS et al. : Examiner: M. Ocampo

Serial No.: 09/935,365 : Group Art Unit: 1723

Filed: September 22, 1997 :

For: LOW PROFILE EXTRUDED UNDERDRAIN :

AMENDED APPEAL BRIEF

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APPEAL BRIEF

Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Dear Sir:

Applicant's submit this Appeal Brief in support of the Appeal of the Official Action dated October 26, 1999 finally rejecting Claims 1 through 7, 18, 19 and 28 of the subject patent application. Applicants filed the Notice of Appeal on January 24, 2000. Accordingly, Applicants' submit herewith a Petition for Extension of Time extending the time for filing the Appeal Brief to Monday, June 26, 2000.

In support of their appeal Applicants state the following:

I. REAL PARTY IN INTEREST

The real party in interest is the assignee RG, Delaware, Inc. of 103 Foulk Road, Suite

202, P. O. Box 1958, Wilmington, Delaware, Inc. 19899.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF CLAIMS

Claims 8 through 17 and 20 through 27 have been withdrawn from consideration .

Claims 1 through 7 have been finally rejected under 35 USC § 112, second paragraph.

Claims 1 through 7 and 28 are finally rejected under 35 USC § 103 as being unpatentable over U.S. Patent No. 5,489,388 (hereinafter "Brown '388")

Claim 18 is finally rejected under 35 USC § 103 as being unpatentable over the combination of Brown '388 and U.S. Patent No. 5,269,920 (hereinafter "Brown '920").

Claim 19 is finally rejected under 35 USC § 103 as being unpatentable over the combination of Brown '388; Brown '920; and U.S. Patent 4,579,659 (hereinafter "Eades et al.").

IV. STATUS OF AMENDMENTS

No amendments after final rejection have been filed.

V. SUMMARY OF INVENTION

Applicants' invention, as recited in Claim 18, is directed to a novel and unobvious underdrain block for an underdrain system supporting a filter media bed in a liquid filtration system. The underdrain block includes an upper wall, side walls and a lower wall. These walls define an interior of the underdrain block. Three laterals are formed in the interior of the

underdrain block. Two of the laterals are vertically oriented while the third lateral is horizontally oriented. *The two vertically oriented laterals divide the interior of the underdrain block into three sections of approximately equal size. The horizontal lateral intersects the two vertical laterals such that the horizontal lateral divides the interior of the underdrain block into six chambers comprising three upper chambers of approximately equal size and three lower chambers of approximately equal size.* A plurality of upper orifices extend through the upper wall of the underdrain block. A plurality of internal orifices extend through the horizontal lateral. This construction significantly reduces the complexity of the underdrain block design which in turn reduces the overall cost of manufacture. Further, an underdrain block formed in accordance with Applicants' invention has greater structural strength than underdrain blocks employing inclined lateral members in the interior thereof.

Applicants' invention, as recited in Claim 1, is an underdrain block for an underdrain system supporting a filter media bed in a liquid filtration system. The underdrain block includes an upper wall, side walls and a lower wall. At least one lateral within the underdrain block extends between the upper wall and the lower wall. At least two chambers are formed within the underdrain block. Each chamber is defined by the lateral. A plurality of orifices are formed in the upper wall of the underdrain block. Further, a plurality of internal orifices are formed in the lateral. The underdrain block of Claim 1 is *jointless and extends substantially the length of a filter media supported by the underdrain block.* An underdrain block formed in accordance with Applicants' invention, as recited in Claim 1, is a significant improvement over previously

known underdrain blocks. As explained in detail in the Specification, previously known underdrain blocks varied in length from two to four feet. (See Specification, page 3, lines 27 to 34) Due to the size of previously known underdrain blocks it was necessary to position numerous blocks end to end to form an underdrain lateral system which extended the length of the filter media bed. These joints lead to undesirable headloss. (See Specification, page 4, lines 10 to 26) Applicants' invention completely eliminates the joints formed between underdrain blocks positioned end to end. Accordingly, Applicants' invention does not suffer from the undesirable headloss of previously known underdrain blocks.

Applicants' invention, as recited in Claim 28, is directed to an underdrain block for an underdrain system supporting a filter media in a liquid filtration system. The underdrain block includes a plurality of walls integrally connected. At least one chamber within the underdrain block is defined by the walls. The underdrain block *is jointless and has a longitudinal length of at least five feet.* As explained in detail in the Specification, previously known underdrain blocks varied in length from two to four feet. (See Specification, page 3, lines 27 to 34) Due to the size of previously known underdrain blocks it is necessary to position at least two blocks end to end to form an underdrain block as claimed by Applicants. Such a construction will lead to at least one joint and undesirable headloss attendant thereto. (See Specification, page 4, lines 10 to 26) Applicants' invention eliminates the need from a joint formed between underdrain blocks positioned end to end. Accordingly, Applicants' invention does not suffer from the undesirable headloss of previously known underdrain blocks.

VI. ISSUES PRESENTED FOR REVIEW

The following issues are presented by this Appeal:

1. Whether Applicants' invention recited in Claim 18 is unpatentable under 35 USC §103 over the combination of Brown '388 and Brown '920.

2. Whether Applicants' invention recited in Claim 19 is unpatentable under 35 USC §103 over the combination of Brown '388, Brown '920 and Eades et al.

3. Whether Applicants' invention recited in Claims 1 through 7 and 28 are unpatentable under 35 USC §103 in view of Brown '388.

4. Whether Applicants' invention recited in Claim 1 fully complies with 35 USC §112, second paragraph.

VII. GROUPING OF CLAIMS

GROUP 1 - Claim 18.

GROUP 2 - Claim 19.

GROUP 3 - Claim 1 to 7.

GROUP 4 - Claim 28.

VIII. ARGUMENT

In this section of the Appeal Brief, Applicants first explain why the rejection of all pending claims under 35 USC §103 is in error. Subsequently, Applicants explain why Claim 1 fully complies with 35 USC §112, second paragraph.

A. THE EXAMINER HAS ERRED IN REJECTING CLAIMS 1 THROUGH 7, 18, 19 AND 28 UNDER 35 USC § 103

Applicants' invention, as set forth in Claims 1 to 7, 18, 19 and 28 clearly satisfy the novelty requirement set forth in 35 USC §102. The is readily confirmed from the fact that the Examiner has not rejected a single pending claim under 35 USC §102. The sole basis for rejecting the pending claims based on prior art is obviousness. However, in purportedly applying 35 USC § 103 the Examiner has failed to consider the claimed invention in its entirety. Further, the Examiner has failed to provide any motivation or suggestion for the proposed modifications of the prior art in an attempt to satisfy the claimed invention. The Examiner has viewed only isolated portions of the prior art and ignored teachings negating the proposed modifications necessary to satisfy the claimed invention. Finally, in regard to Claims 18 and 19 the Examiner has failed to recognize that the proposed combination of prior art references does not satisfy the claimed invention.

1. Claim 18 is patentable over the combination of Brown '388 and Brown '920

Claim 18 is directed to a novel and unobvious underdrain block for an underdrain system supporting a filter media bed in a liquid filtration system. The underdrain block includes an upper wall, side walls and a lower wall. These walls define an interior of the underdrain block. Three laterals are formed in the interior of the underdrain block. Two of the laterals are vertically oriented while the third lateral is horizontally oriented. *The two vertically oriented laterals divide the interior of the underdrain block into three sections of approximately equal*

size. The horizontal lateral intersects the two vertical laterals such that the horizontal lateral divides the interior of the underdrain block into six chambers comprising three upper chambers of approximately equal size and three lower chambers of approximately equal size. A plurality of upper orifices extend through the upper wall of the underdrain block. A plurality of internal orifices extend through the horizontal lateral. This construction significantly reduces the complexity of the underdrain block design which in turn reduces the overall cost of manufacture. Further, an underdrain block formed in accordance with Applicants' invention has greater structural strength than underdrain blocks employing inclined lateral members in the interior thereof.

In rejecting Claim 18, the Examiner has relied upon the combination of Brown '388 and Brown '920. Brown '388 and Brown '920, taken alone or in combination, do not teach or suggest Applicants' invention, as set forth in Claim 18. The Examiner has conceded that Brown '388 fails to teach or suggest an underdrain block having three lateral members which form six chambers of the type defined in Claim 18. In an attempt to supply this admitted deficiency of Brown '388, the Examiner has relied upon Brown '920. *However, Brown '920 fails to teach two vertical lateral members which form three chambers of approximately equal size.* The Examiner has not and cannot dispute this fact. In fact, the Examiner concedes that Brown '920 requires four vertical lateral members. (See Official Action dated October 26, 1999, p. 6 ¶ 6) Further, Brown '920 requires five lateral members to form six chambers. Moreover, in the construction of the underdrain block of Brown '920, only two of the upper chambers and two

of the lower chambers are of approximately equal size. This construction is contrary to that claimed by Applicants. Specifically, the three upper chambers are of approximately equal size and the three lower chambers are of approximately equal size. Accordingly, even if Brown '388 was modified as disclosed by Brown '920, the modified underdrain block construction does not satisfy Applicants' invention, as recited in Claim 18.

In addition to the proposed combination failing to satisfy the claimed invention, there is no objective teaching or suggestion for combining Brown '388 and Brown '920. Specifically, Brown '388 is directed to solving the problem of "drag water return." To achieve this end, the '388 patent discloses a specific construction for the interior of an underdrain block. One of ordinary skill in the art would not modify the underdrain block construction of Brown '388 as proposed by the Examiner in view of the principal objective of overcoming "drag water return."

2. Claim 19 is patentable over the combination of Brown '388, Brown '920 and Eads '659

Claim 19 depends from Claim 18[1] and further patentably defines Applicants' invention over the prior art of record. Claim 19 provides *a plurality of air nozzles located in each section of the underdrain block*. As recited in Claim 18, the interior of the underdrain block is divided into three sections by a pair of vertical lateral members. Each air nozzle is located at different lengths along the length of the underdrain. Each air nozzle includes a pipe having a closed end and an open end. *The pipe extends from the lower wall of the underdrain through the internal*

[1]Since Claim 19 depends from Claim 18 it is clearly patentable for the reasons stated in connection with Claim 18.

orifice into the upper chamber. The pipe has a vertical slot proximate the closed end and situated in the lower chamber substantially near the lower wall. The pipe further includes a hole situated in the lower chamber substantially near the horizontal lateral member. The open end is situated in the upper chamber substantially near the horizontal lateral member.

On pages 7 and 8 of the Official Action, the Examiner concedes that neither Brown et al. '388 nor Brown et al. '920 teach or suggest the air nozzle feature recited in Claim 19. However, the Examiner contends that Eads '659 when combined with aforementioned patents renders obvious Claim 19. This contention is specious. First there is no teaching, suggestion or motivation for combining Eads '659 with Brown et al. '388 or Brown et al. '920. The Eads' underdrain system includes a single horizontally extending plate 21 which is spaced from the bottom of the filter, rather than an underdrain block as claimed by Applicants. The plate 21 supports the nozzles 20 *such that a substantial portion of the nozzles extend into the filter media.* In direct contrast to the teachings of Eads, the underdrain system in the Brown patents employ a plurality of underdrain blocks positioned in end to end relationship. The Brown underdrain blocks do not include nozzles contained therein. If the Brown patents were to use the nozzle type of underdrain system taught in Eads, there would be no need to use the underdrain blocks. Further, there is simply no objective teaching for modifying the Brown underdrain blocks to include air nozzles in the interior thereof.

Even if Eads was combined with the two Brown patents such a combination does not render obvious Claim 19. Specifically, Claim 19 requires that the closed end of the nozzle be

located in the lower chamber substantially near the lower wall of the underdrain block and the open end be located in the upper chamber substantially near the horizontal lateral member. Eads fails to teach or suggest an underdrain block having upper and lower chambers let alone an underdrain block having an air nozzle oriented in manner recited in Claim 19. In fact, Eads expressly teaches that the uppermost end of the nozzle be closed. This is in direct contrast to Applicants' invention as set forth in Claim 19 which requires the open end to be positioned above the closed end. Eads expressly states that a principle objective of his invention is to provide the uppermost portion of the nozzle with a closed end to avoid the use of a support grid for preventing the nozzles from being clogged with filter media. See Col. 1, lines 10 to 57. Accordingly, one of ordinary skill in the art would not modify the nozzles of Eads in view of this express teaching designed to prevent nozzle clogging without the use of support grids. Further, the air nozzles of Eads must extend into the filter media in order to operate as desired. Once again this is in direct contrast to Applicants' invention as set forth in Claim 19. Claim 19 requires that each air nozzle comprises a pipe with an open end and a closed end. The closed end is positioned near the lower wall of the underdrain block. The open end is positioned in the upper chamber of the underdrain block substantially near the horizontal lateral member. Accordingly, the air nozzle of Applicants' invention does not extend into the filter media which is supported by the underdrain block. Moreover, Eads fails to teach or suggest a nozzle having vertical slot proximate the closed end. On the contrary, Eads teaches the exact opposite by positioning the vertical slot near the open end of the nozzle. For the foregoing reasons,

Applicants respectfully submit that Claim 19 patentably defines over the prior art of record.

3. Claims 1 through 7 and 28 patentably define over Brown '388

Claim 1 is directed to an underdrain block for an underdrain system supporting a filter media bed in a liquid filtration system. The underdrain block includes an upper wall, side walls and a lower wall. At least one lateral within the underdrain block extends between the upper wall and the lower wall. At least two chambers are formed within the underdrain block. Each chamber is defined by the lateral. A plurality of orifices are formed in the upper wall of the underdrain block. Further, a plurality of internal orifices are formed in the lateral. The underdrain block of Claim 1 is *jointless and extends substantially the length of a filter media supported by the underdrain block.* An underdrain block formed in accordance with Applicants' invention, as recited in Claim 1, is a significant improvement over previously known underdrain blocks. As explained in detail in the Specification, previously known underdrain blocks varied in length from two to four feet. (See Specification, page 3, lines 27 to 34) Due to the size of previously known underdrain blocks it was necessary to position blocks end to end to form an underdrain lateral system which extended the length of the filter media bed. These joints lead to undesirable headloss. (See Specification, page 4, lines 10 to 26) Applicants' invention completely eliminates the joints formed between underdrain blocks positioned end to end. Accordingly, Applicants' invention does not suffer from the undesirable headloss of previously known underdrain blocks.

The Examiner concedes that Brown '388 does not disclose an underdrain block that is

jointless and which extends the length of the filter media bed it supports. Hence, Brown '388 suffers from the aforementioned infirmity of undesirable headloss. Brown '388 clearly teaches away from the claimed invention by configuring the underdrain block in lengths of two to four feet requiring a multitude of underdrain blocks positioned in end to end relationship to extend the length of the filter media bed supported thereby. This is readily evident from Figure 1 of Brown '388. Accordingly, Brown '388 fails to teach or suggest Applicants' invention, as recited in Claim 1.

Claim 4 depends from Claim 1 and further recites that the underdrain blocks extends the length of the filter media bed supported thereby. As seen in connection with Claim 1, Brown '388 fails to teach or suggest a jointless underdrain block which extends *substantially* the length of the filter media bed let alone the length of the filter media bed as required by Claim 4.

Claim 6 depends from Claim 1 and further requires that the underdrain block have a longitudinal length of at least ten feet. Under Brown '388, at least three underdrain blocks in end to end relationship would be required to have a configuration extending at least ten feet. Accordingly, at least two joints would be present as well as the undesirable headloss attendant thereto. Claim 6 clearly patentably defines over the prior art of record.

Claim 7 depends from Claim 1 and further requires that the underdrain block have a longitudinal length of at least twenty feet. Under Brown '388, at least seven underdrain blocks in end to end relationship would be required to have a configuration extending at least twenty feet. Accordingly, at least six joints would be present as well as the undesirable headloss

attendant thereto. Claim 7 clearly patentably defines over the prior art of record.

Claim 28 is directed to an underdrain block for an underdrain system supporting a filter media in a liquid filtration system. The underdrain block includes a plurality of walls integrally connected. At least one chamber within the underdrain block is defined by the walls. The underdrain block *is jointless and has a longitudinal length of at least five feet.* As explained in detail in the Specification, previously known underdrain blocks varied in length from two to four feet. (See Specification, page 3, lines 27 to 34) Due to the size of previously known underdrain blocks it is necessary to position at least two end to end to form an underdrain block as claimed by Applicants. Such a construction will lead to at least one joint and undesirable headloss attendant thereto. (See Specification, page 4, lines 10 to 26) Applicants' invention eliminates the need for a joint formed between underdrain blocks positioned end to end. Accordingly, Applicants' invention does not suffer from the undesirable headloss of previously known underdrain blocks.

Brown '388 would require at least two underdrain blocks positioned in end to end relationship to achieve the at least five feet recitation in Claim 28. This configuration would have a joint and the undesirable headloss attendant the joint. It is abundantly clear that Brown '388 does not appreciate the disadvantages attendant to joints in an underdrain system. Accordingly, contrary to the Examiner's contentions, the prior art of record fails to teach or suggest Applicants' invention as recited in Claim 28.

B. THE EXAMINER HAS ERRED IN REJECTING CLAIM 1 UNDER 35 USC § 112

The Examiner contends that the limitation "extends substantially the length of a filter media supported thereby" renders the claim confusing as to its scope. Specifically, the Examiner contends that it is not clear whether the filter media is claimed or not. Applicants' respectfully submit that this phrase in no way renders the claim confusing. The phrase is a structural limitation on the underdrain block rather than the recitation of a separate element such as filter media. In this regard, it is noted that the phrase merely recites the length of the underdrain block, i.e. the underdrain block extends substantially the length of the filter media supported thereby. The claim does not require filter media. Accordingly, Applicants respectfully submit that Claim 1 fully complies with 35 USC §112, second paragraph.

IX. CONCLUSION

Applicants respectfully submit that Claims 1 through 7, 18, 19 and 28 are patentable over the prior art of record. The Examiner has recognized that each of these claims is novel. However, the Examiner has erred in applying 35 USC § 103 to reject each of these claims. In purportedly applying the statute, the Examiner has failed to consider the claimed invention in its entirety. Further, the Examiner has failed to provide any motivation or suggestion for the numerous proposed modifications of the prior art necessary to satisfy the claimed invention. Rather, the Examiner has viewed only isolated portions of the prior art and ignored the complete lack of evidence to support the obviousness of the proposed modifications necessary to satisfy

the claimed invention and/or the teachings in the prior art negating the same.

A check in the amount of $150.00 is attached hereto to satisfy the government fee for filing an Appeal Brief pursuant to 37 CFR §1.17(c). It is believed that no additional fees are owing. However, should that determination be incorrect, the Patent Office Officials are hereby authorized to charge Deposit Account No. 13-2759 for any fees which may be due. The undersigned is to be notified of any charges to the aforementioned deposit account.

Respectfully submitted,

Date: 6/16/11

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X. APPENDIX

1. An underdrain block for an underdrain system supporting a filter media in a liquid filtration system, the underdrain block comprising:

an upper wall, side walls, and a lower wall;

at least one lateral member within the underdrain block between the upper wall and the lower wall;

at least two chambers within the underdrain block, each chamber being defined by the lateral member;

a plurality of orifices in the upper wall of the underdrain block; and

a plurality of internal orifices in the lateral member;

wherein the underdrain block is jointless and extends substantially the length of a filter media supported thereby.

2. The underdrain block of claim 1 further comprising a conduit in the lower wall for an effluent to flow out of the underdrain and for water and air to flow into the underdrain.

3. The underdrain block of claim 1 further comprising a passageway between an end of at least one chamber of the underdrain block and a wall sleeve, said wall sleeve providing a conduit for effluent to flow out of the underdrain and for water and air to flow into the underdrain.

4. The underdrain block of claim 1 for use in a filter bed, wherein the underdrain block extends the length of the filter media bed.

5. The underdrain block of claim 1, wherein the internal orifices formed in the lateral member of the underdrain block extends in the same direction as the orifices formed in the upper wall.

6. The underdrain block of claim 1, wherein the longitudinal length is at least 10 feet.

7. The underdrain block of claim 1, wherein the longitudinal length is at least 20 feet.

18. An underdrain block for an underdrain system supporting a filter media bed in a liquid filtration system, the underdrain block comprising:

an upper wall, side walls, and a lower wall, said walls defining an interior of said underdrain block;

three laterals members within the underdrain block comprising two vertical lateral members and one horizontal lateral member, said two vertical lateral members dividing said interior of the underdrain block into three sections of approximately equal size, said horizontal lateral member intersecting said two vertical lateral members such that said horizontal lateral member further divides the interior of the underdrain block into six chambers comprising three upper chambers of approximately equal size located above said horizontal lateral member and three lower chambers of approximately equal size located below said horizontal lateral member;

a plurality of upper orifices through the upper wall of the underdrain block; and

a plurality of internal orifices through the horizontal lateral member.

19. The underdrain block of claim 18 further comprising:

a plurality of air nozzles located in each section of the underdrain and each located at

different lengths along the length of the underdrain, each air nozzle comprising:

a pipe having a closed end and an open end, said pipe extending from the lower wall of said underdrain through the internal orifice into the upper chamber, said pipe having a vertical slot proximate the closed end and situated in the lower chamber substantially near the lower wall, said pipe further having a hole situated in the lower chamber substantially near the horizontal lateral member, said open end situated in the upper chamber substantially near the horizontal lateral member.

28. An underdrain block for an underdrain system supporting a filter media bed in a liquid filtration system, the underdrain block comprising:

a plurality of walls integrally connected; and

at least one chamber within the underdrain block being defined by the walls;

wherein the underdrain block is jointless and has a longitudinal length of at least five feet.